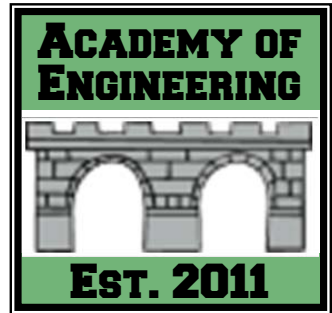


Solar Power Fundamentals 4 Weeks

RENG 103

50 Hrs



MODULE: 4

CREDIT AREA: Occupational Education

COURSE OUTCOME: Upon successful completion of the course students will be knowledgeable of basic solar power systems, charge controllers, storage systems, inverters and other basic installation considerations. The class concludes with a review of the students drawing portfolio and coursework handouts by the instructor.

COURSE DESCRIPTION: Fundamentals of solar radiation, site surveys, components, arrays, batteries, charge controllers, inverters, sizing, mechanical & electrical integration, permitting, troubleshooting and economic analysis.

PREREQUISITES: RENG 102

COURSE OUTLINE:

Section	Instructor	Subject	Project	Value
1	Swartos/Bren	Photovoltaic Introduction	Assignment 1	10 Points
2	Swartos/Bren	Solar Radiation and Site Surveys	Assignment 2	10 Points
3	Swartos/Bren	Components and Configurations	Assignment 3	10 Points
4	Swartos/Bren	Modules and Arrays	Assignment 4	10 Points
5	Swartos/Bren	Batteries	Assignment 5	10 Points
6	Swartos/Bren	Charge Controllers	Assignment 6	10 Points
7	Swartos/Bren	Inverters	-	-
8	Swartos/Bren	System Sizing	-	-
9			Portfolio Review	20 Points
10			Attendance	20 Points

STUDENT PERFORMANCE OBJECTIVES:

- 1) Explain solar radiation and photovoltaic applications
- 2) Solve basic electrical problems involving voltage, current, resistance, and power.
- 3) Explain the relationship between solar system components.
- 4) Explain the importance of charge controllers.
- 5) Describe inverter specifications.
- 6) Sketch a basic systems mechanical and electrical integration.
- 7) Figure a systems basic sizing calculations
- 8) Prepare and present a portfolio for the class including all drawings and handouts.

METHODS OF INSTRUCTION:

1. Lecture Examples
2. Handouts
3. Demonstrations

STUDENT ASSIGNMENT REQUIREMENTS:

1. Weekly Attendance Character
2. (6) class assignments
3. (1) Portfolio and 3-Ring Binder Instructor Review

EVALUATION AND GRADING STANDARDS:

The class assignments are worth (10) points each for a total of 60 points. A portfolio drawing and 3-ring binder organization instructor review is worth a total of 20 points. Attendance is worth (1) point/day for a total of 20 points. The total points for this module is **100 points**. The points from this module will be added to the total for the Computer Science Credit course to determine a final grade.

REQUIRED STUDENT SUPPLIES AND MATERIALS:

1. (3) Ring Binder
2. Notebook Paper & Writing Utensil
3. Handouts

ADDITIONAL INSTRUCTIONAL RESOURCES:

1. Internet Research
2. **Photovoltaic Systems, 2nd Ed, Dunlop, ISBN 9780826913081.**